

# Anatomy of a Bike Helmet

Have you ever fallen while riding a bicycle? Hopefully you were wearing a helmet! Hitting your head on a hard surface like the road or a sidewalk might result in a serious brain injury. For example, the occipital lobe of your brain is located in the back of your head and is where your vision is processed. A hard blow to the back of your head could leave you with severe vision loss or even total blindness. The front of your brain, called the frontal lobe, is responsible for functions such as speech, some motor skills, memory formation, decision-making, and many others. Hitting the front of your head after a fall from a bicycle could result in problems with speech, poor coordination, or difficulty remembering things or making decisions.



This picture shows a bicycle helmet that was damaged when a rider hit his head during a fall.

Helmets, designed specifically for bicycle riders, are important safety gear that can protect your brain in a fall or an accident. In fact, wearing a helmet is associated with a 60% decrease in serious head injuries for riders who hit their heads during falls or accidents.

So what makes a helmet effective? The Consumer Products Safety Commission is the regulating agency in the United States that determines safety standards for many products, including bicycle helmets. There are many choices in helmets, and prices range from very expensive to very affordable. Expensive helmets are not necessarily better. Low-cost helmets that meet the safety standards are good choices for bicycle riders. When choosing a helmet, you should always make sure that it meets these standards. There are other considerations for helmet manufacturers and bicycle riders, too. A helmet should

- fit snugly and stay in position when you are moving around,
- have easily adjusted straps,
- be lightweight and comfortable, and
- not block your vision in any way.

You may be wondering why helmets look the way they do. The thickness and shape of helmets are purposely designed to protect your brain, but manufacturers also want helmets to look cool so consumers will wear them. Let's take a look at the structure of a bicycle helmet.

Helmets have hard outer shells made of lightweight materials like polycarbonate or fiberglass. There are often vents in the outer shell to allow air to flow over the cyclist's head. This hard layer can crack during a collision.

Helmets have an inner layer of crushable foam. The foam has air pockets that are designed to squish during a collision--but not too quickly!

Helmets have internal mechanisms like adjustable straps and pads to ensure a snug and stable fit for many different head sizes.

If you have a bicycle helmet that doesn't meet current safety standards or that doesn't fit well, you should replace it. You should also replace your helmet if it's been in a collision because it might not effectively protect you in another collision.

Would small cracks in the outer shell of a helmet make it unsafe?

If the inner foam layer of a helmet was crushed in one spot, would the helmet be unsafe?

Why might it be a good thing for a helmet to be designed to break during a collision?



Helmets are made of many parts.